

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 24 AUG 2004

WIPO PCT

07 OCT 2004

| | | | |
|--|---|--|--|
| Applicant's or agent's file reference 305187576 | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416). | |
| International Application No. PCT/AU2003/000740 | International Filing Date (day/month/year) 13 June 2003 | Priority Date (day/month/year) 14 June 2002 | |
| International Patent Classification (IPC) or national classification and IPC Int. Cl. 7 H04B 1/10 | | | |
| <p>Applicant DSPACE PTY LTD et al</p> | | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheet(s).

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

| | |
|---|--|
| Date of submission of the demand 4 December 2003 | Date of completion of the report 10 August 2004 |
| Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929 | Authorized Officer JOSEPH ARROUK Telephone No. (02) 6283 2219 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU2003/000740

I. Basis of the report

1. With regard to the elements of the international application:*

- the international application as originally filed.
- the description, pages 1 - 20, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- the claims, pages 21 - 23, as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 24, received on 10 August 2004 with the letter of 10 August 2004
- the drawings, pages 1/6 - 6/6, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/fig.

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU2003/000740

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | |
|-------------------------------|---------------|-----|
| Novelty (N) | Claims 1 - 26 | YES |
| | Claims | NO |
| Inventive step (IS) | Claims 1 - 26 | YES |
| | Claims | NO |
| Industrial applicability (IA) | Claims 1 - 26 | YES |
| | Claims | NO |

2. Citations and explanations (Rule 70.7)

None of the citations cited in the corresponding ISR disclose all the features defined in claims 1 - 26 of the present application. Therefore, claims 1 - 26 are considered to be novel and inventive of the prior art documents cited in the corresponding ISR. The invention defined in claims 1 - 26 of the present application is also considered to be industrially applicable.

19. The receiver of claim 17 or claim 18, wherein the stopping criteria comprises a sign change ratio stopping criteria.
20. The receiver of any one of claims 14 to 16, wherein the decoder convergence criteria utilises a stored value of the optimal number of iterations of the iterative decoding algorithm for any particular iteration of the iterative receiver process.
21. The receiver of claim 20, wherein the stored values are calculated from investigation of the convergence behaviour of the iterative decoding algorithm and/or the iterative receiver process.
22. The receiver of claim 21 wherein the investigation includes analysing the exchange of mutual information between the output of the interference canceller and the iterative decoding algorithm during an offline simulation of the iterative receiver process.
23. The receiver of any one of claims 14 to 22, including a plurality of calculating means and digital signal processors for the parallel refining and decoding of a posteriori probabilities for each of the plurality of users detected by the detector.
24. The receiver of claim 23, including a channel estimator for providing updated channel estimates for each user and combining the updated channel estimates with the refined probabilities to form the weighted representations of user signals used in a subsequent iteration of the iterative receiver process.
25. The receiver of claim 24, wherein the updated channel estimates for each user signal comprise an estimate of characteristics selected from the group of timing, interference, frequency, amplitude, phase and interference.
26. The receiver of any one of claims 14 to 25, wherein the iterative decoding algorithm is a turbo decoding algorithm.